

WHAT IS CLAIMED IS:

1. An isolated polynucleotide encoding a root growth regulating polypeptide,
wherein the polypeptide comprising an amino acid sequence set forth in SEQ ID NO:
5 2 or an amino acid sequence with at least 90% sequence homology to SEQ ID NO: 2.
2. The polynucleotide of claim 1, having the nucleic acid sequence set forth
in SEQ ID NO: 1.
- 10 3. The polynucleotide of claim 1, having a root-specific expression pattern.
4. A recombinant vector comprising the polynucleotide of claim 1.
5. A cell comprising the polynucleotide of claim 1.
- 15 6. A plant comprising the polynucleotide of claim 1.
7. A plant tissue or seed derived from the plant of claim 6.
- 20 8. A method for enhancing root growth of a plant, comprising the step of
introducing a polynucleotide of claim 1 into the plant cell, wherein the
polynucleotide is operably linked to an expression control sequence.
9. The method of claim 8, wherein the plant cell is selected from the group
25 consisting of protoplasts, gamete producing cells and cells with regenerate into a
whole plant.

10. The method of claim 8, wherein the plant cell is monocotyledon or dicotyledon.

5 11. A method for enhancing resistance in a plant to obstacle-touching stress, comprising the step of introducing a polynucleotide of claim 1 into the plant cell, wherein the polynucleotide is operably linked to an expression control sequence.

12. The method according to claim 11, wherein the plant cell is selected from
10 the group consisting of protoplasts, gamete producing cells and cells with regenerate into a whole plant.

13. The method of claim 11, wherein the plant cell is monocotyledon or dicotyledon.

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14. A method for identifying a compound affecting the activity or expression of the polynucleotide of claim 1, comprising the steps of :

(i) contacting a recombinant cell expressing the polynucleotide of claim 1 with a candidate material; and

20 (ii) measuring an effect on the activity or expression of the polynucleotide.

15. The method according to claim 14, wherein the compound enhances the activity or expression of the polynucleotide of claim 1.

25 16. An isolated polynucleotide encoding a polypeptide, wherein the polypeptide hybridizes to the nucleic acid sequence of SEQ ID NO: 1 or its

complement, under high stringency conditions.